BRUHATH BANGALORE MAHANAGARA PALIKE

Name of the Agency	:	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	:	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Estimate Cost	:	Rs.

QUALITY CONTROL REPORTS TO

Asst. Executive Engineer,
Shettyhalli Sub Division,
Dasarahalli Zone,
BBMP, Bangalore.

CIVIL-TECH CONSULTANTS & ENGINEERS

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QUALITY CONTROL REPORTS FOR

GRANUALAR SUB BASE (GSB)

CIVIL-TECH CONSULTANTS AND ENGINEERS

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Job No.: CTCE/BBMP/W.No.12/KRIDL/GSB-I/GR/2014-15 Date : 03.07.2014

GRADATION FOR GSB-I (CLOSE GRADED)
IS: 2720 (Part 4)

Client : **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of work : Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014

Date of Testing : 03.07.2014

Sample Source : GSB Mix Plant Bangalore. **Oven Dry Wt (gm) :** 25000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	0	100
53.0	1150	1150	4.60	95.40	80-100
26.50	6245	7395	29.58	70.42	55-90
9.50	3880	11275	45.10	54.90	35-65
4.75	3565	14840	59.36	40.64	25-55
2.36	2000	16840	67.36	32.64	20-40
0.425	4500	21340	85.36	14.64	10-25
0.075	2560	23900	95.60	4.40	3-10
PAN	1100				
Total	25000				

Civil-Tech Consultants & Engineers Bangalore

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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ದಕ್ಷಿಣ ಉಪವಿಭಾಗ ಸಂಖ್ಯೆ
ಪ್ರಭಾರ ವಹಿಸಿರುವ ಸಹಾಯಕ
ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು, ಬೆಂಗಳೂರು.

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Job No.: CTCE/BBMP/W.No.12/KRIDL/GSB-1/AL/2014-15 Date : 03.07.2014

ATTERBERG LIMITS TEST FOR GSB (CLOSE GRADED)
IS : 2720 (Part - 5)

Client : **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of work : Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014

Date of Testing : 03.07.2014

As per MORTH Table : 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.00	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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ಬಿಬಿಎಂಪಿ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಬೆಂ-೫೦ ನಕ್ಷೆ, ಕುವೆಂಪುನಗರ, ಬೆಂಗಳೂರು

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QUALITY CONTROL REPORTS FOR

WE MIX MACADAM(WMM)

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Job No.: CTCE/BBMP/W.No.12/KRIDL/WMM/Gradation/2014-15 07.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.

Agency : **Technical Manager,** KRIDL, Bangalore.

Name of Work : Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014

Date of Testing : 07.07.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **26000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	990	990	3.8	96.2	95-100
22.4	5490	6480	24.9	75.1	60-80
11.2	5245	11725	45.1	54.9	40-60
4.75	4990	16715	64.3	35.7	25-40
2.36	3615	20330	78.2	21.8	15-30
0.600	2215	22545	86.7	13.3	8-22
0.075	2255	24800	95.4	4.6	0-8

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Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	07.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines	22.08	22.28	
	$100^* (W_2/W_1)\%$			**22.01**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.12/KRIDL/WMM/S-T/2014-15 07.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	07.07.2014

Result : Flakiness Index = **12.53%**

Elongation Index = **13.50%**

Result : Combined Flakiness & Elongation index **26.03%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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QUALITY CONTROL REPORTS FOR

BITUMINOUS MACADAM

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BM/Bitumen/2014-15 14.07.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

AS per IRC:SP:-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
AGENCY	**Technical Manager,** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Hesaraghatta Mai Road from Chikkasandra Circle to Sapthagiri College in Kuvempu Layout.
DATE OF TESTING	14.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	482
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	18.00
7. Bitumen content in %	3.50	3.60
8. Average	**3.55**	

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BM/Bitumen/2014-15 14.07.2014

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As per IS2386 and IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
AGENCY	**Technical Manager,** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Hesaraghatta Mai Road from Chikkasandra Circle to Sapthagiri College in Kuvempu Layout.
DATE OF TESTING	14.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	31.25	6.48	6.48	93.52	90-100
13.2	84.56	17.53	24.00	76.00	56-88
4.75	261.5	54.20	78.20	21.80	16-36
2.36	46.32	9.60	87.80	12.20	4-19
0.3	15.65	3.24	91.04	8.96	2-10
0.075	6.39	1.32	92.37	7.63	0-8

Þ The results indicated above are based on the tests carried	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	35.62	7.39	7.39	92.61	90-100
13.2	80.25	16.65	24.04	75.96	56-88
4.75	264.5	54.88	78.91	21.09	16-36
2.36	46.36	9.62	88.53	11.47	4-19
0.3	18.25	3.79	92.32	7.68	2-10
0.075	7.85	1.63	93.95	6.05	0-8

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QUALITY CONTROL REPORTS FOR

BITUMINOUS CONCRETE

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Building & Highway Material Testing Laboratory

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Job No.: CTCE/BBMP/W.No.12/KRIDL/QB(BC)/2014-15 11.07.2014

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

CLIENT	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
AGENCY	:	**Technical Manager,** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	11.07.2014

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	68	60 to 70
2	Softening point, °C	IS :1205 -1978 (RA-2009)	44	Min. 45
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 50
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	294	Min. 220

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/AIV/2014-15 14.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	376	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	83	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	293	293	
4	Aggregate Impact value = percent fines			
	100^* (W_2/W_1) percent	21.87	22.07	**21.97**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/AIV/2014-15 14.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	299	
4	Aggregate Impact value = percent fines			
	100^{*} (W_2/W_1) percent	22.02	22.34	22.18

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/AIV/2014-15 14.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	378	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	20.63	20.84	**20.74**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/AIV/2014-15 14.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	14.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	381	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	300	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.05	21.26	**21.16**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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ಕರ್ನಾಟಕ ಕಾರ್ಯನಿರ್ವಹಣಾ ಪ್ರಾಧಿಕಾರದ
ಪ್ರಯೋಜನಕ್ಕಾಗಿ ಮಾತ್ರ ಪ್ರಮಾಣೀಕರಿಸಲಾಗಿದೆ
ಪ್ರಯೋಜನ ಪಡೆಯುವುದು ಮತ್ತು ಪ್ರಮಾಣಪತ್ರ ಮಾಲೀಕತ್ವ
ಬಿಬಿಎಂಪಿ ವ್ಯಾಪ್ತಿ, ದಾಸರಹಳ್ಳಿ ವಲಯ, ಬೆಂಗಳೂರು.

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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/Shape.T/2014-15 : 15.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of Work	: Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 15.07.2014

Result : Flakiness Index = **11.98%**

Elongation Index = **13.21%**

Result : Combined Flakiness & Elongation index **25.19%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Dense Graded Bituminous Macadam is 30%

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ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬ್ಯಾಕ್ಟೆ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಮಾ.ಎಂ ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/Shape.T/2014-15 : 15.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of Work	: Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 15.07.2014

Result : Flakiness Index = **12.32%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **25.57%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Dense Graded Bituminous Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of Work	: Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 15.07.2014

Result : Flakiness Index = **11.65%**

Elongation Index = **13.25%**

Result : Combined Flakiness & Elongation index **24.90%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Dense Graded Bituminous Macadam is 30%

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/Shape.T/2014-15 : 15.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	: **Technical Manager,** KRIDL, Bangalore.
Name of Work	: Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 15.07.2014

Result : Flakiness Index = **12.56%**

Elongation Index = **13.62%**

Result : Combined Flakiness & Elongation index **26.18%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Dense Graded Bituminous Macadam is 30%

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/Stripping/2014-15 17.07.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ./PR/2014-15 Dated: 30.06.2014
Type of Mix	Bituminous Concrete
Date of Testing	17.07.2014

Type of binder : 60/70

Percentage of binder used : 5.00% by wt.

Total weight of aggregate : 200 g

Total weight of binder : 10.00 g

Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1		
2	3.2	3.20	96.80
3	3.3		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/Sp_Wa/2014-15 17.07.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of the Work	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Type of Mix	Bituminous Concrete
Date of Testing	17.07.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	1993	1994	1995	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1240	
4	Weight of saturated surface dry aggregate in air	W_3 g	2019	2020	2021	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	780	782	781	
6	Weight of oven dried aggregate	W_4 g	2002	2003	2004	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.567	2.561	2.566	2.565
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.624	2.618	2.623	2.622
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.85%	0.85%	0.85%	0.85%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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JobNo: CTCE/BBMP/W.No.12/KRIDL/BC/Bitumen/2014-15 17.07.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS CONCRETE MIX

As per IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
AGENCY	**Technical Manager,** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Roads from Gundur Gundur Bidarahalli Main Road to Kada Agarahara Road in Mandur village.
DATE OF TESTING	17.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	**5.10**	

Note:

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JobNo: CTCE/BBMP/W.No.12/KRIDL/BC/Bitumen/2014-15 17.07.2014

BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

As Per IS 2386 and IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
AGENCY	**Technical Manager,** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Hesaraghatta Mai Road from Chikkasandra Circle to Sapthagiri College in Kuvempu Layout.
DATE OF TESTING	17.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	44.25	9.32	9.32	90.68	79-100
9.5	34.25	7.21	16.53	83.47	70-88
4.75	70.25	14.79	31.32	68.68	53-71
2.36	65.32	13.75	45.07	54.93	42-58
1.18	49.65	10.45	55.52	44.48	34-48
0.6	63.32	13.33	68.85	31.15	26-38
0.3	48.25	10.16	79.01	20.99	18-28
0.15	34.52	7.27	86.28	13.72	12-20
0.075	36.32	7.65	93.92	6.08	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	37.85	7.99	7.99	92.01	79-100
9.5	45.26	9.55	17.53	82.47	70-88
4.75	73.21	15.45	32.98	67.02	53-71
2.36	64.25	13.55	46.53	53.47	42-58
1.18	73.25	15.45	61.98	38.01	34-48
0.6	43.25	9.12	71.11	28.89	26-38
0.3	36.21	7.64	78.75	21.25	18-28
0.15	42.25	8.91	87.66	12.34	12-20
0.075	33.25	7.01	94.68	5.32	4-10

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Job No.: CTCE/BBMP/W.No.12/KRIDL/BC/Agg/2014-15 17.07.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, Dasarahalli Zone, BBMP, Bangalore.
Agency	**Technical Manager,** KRIDL, Bangalore.
Name of theWork	Improvements to Main & Cross Roads in Kuvempu Layout & Chikkasandra village limit, at Medarahalli, in Ward No.12, in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	17.07.2014

Total Weight of Sample: **5300** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	615	11.60	11.60	88.40	79 - 100	
9.5	481	9.08	20.68	79.32	70 - 88	
4.75	632	11.92	32.60	67.40	53 - 71	
2.36	520	9.81	42.42	57.58	42 - 58	
1.18	632	11.92	54.34	45.66	34 - 48	
0.600	496	9.36	63.70	36.30	26 - 38	
0.300	546	10.30	74.00	26.00	18 - 28	
0.150	430	8.11	82.11	17.89	12 - 20	
0.075	520	9.81	91.92	8.08	4 - 10	

Total Weight of Sample: **4800** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	612	12.75	12.75	87.25	79 - 100	
9.5	476	9.92	22.67	77.33	70 - 88	
4.75	638	13.29	35.96	64.04	53 - 71	
2.36	513	10.69	46.65	53.35	42 - 58	
1.18	630	13.13	59.77	40.23	34 - 48	
0.600	513	10.69	70.46	29.54	26 - 38	
0.300	406	8.46	78.92	21.08	18 - 28	
0.150	400	8.33	87.25	12.75	12 - 20	
0.075	329	6.85	94.10	5.90	4 - 10	

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